

What is claimed is:

1. A seal shutoff apparatus for use with a vessel having a shaft extending through the vessel, wherein the shaft translates at least between an operating position and a shutoff position, the apparatus comprising:

a collar connected to the shaft such that the collar translates with the shaft;

a stop assembly comprising a first and a second contact surface, wherein the first and second contact surfaces constrain translational movement of the collar; and

a sealing mechanism.

2. An apparatus according to claim 1, wherein the sealing mechanism is integral with the stop assembly, such that the first contact surface together with the collar form a seal when the shaft is in the shutoff position.

3. An apparatus according to claim 1, wherein the stop assembly comprises a first component attached to a second component, the first component comprises the first contact surface and the second component comprises the second contact surface.

4. An apparatus according to claim 1, wherein the sealing mechanism further comprises O-rings.

5. An apparatus according to claim 1, wherein the apparatus further comprises a floating flushing bushing and flushing vent, the bushing being operatively connected to the apparatus for tracking radial shaft deflection and being positioned a distance

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from the shaft ranging from about .001" to about .003".

6. An apparatus according to claim 1, wherein the stop assembly constrains the collar from translating greater than about 0.19" in a first direction and from translating greater than about 0.19" in a second direction.

7. An apparatus according to claim 6, wherein the stop assembly constrains the collar from translating greater than about 0.125" in a first direction and from translating greater than about 0.125" in a second direction.

8. An apparatus according to claim 7, wherein the first direction is upward and wherein the second direction is downward.

9. A mixing apparatus for mixing and processing materials comprising:

- a mixing vessel configured for receiving material to be mixed;
- a motor;
- a rotatable shaft extending from the motor and into the mixing vessel;
- a sealing element for providing a primary sealing engagement between the vessel and the rotatable shaft; and

an apparatus for providing secondary sealing engagement between the vessel and the rotatable shaft wherein the shaft translates at least between an operating position and a shutoff position, the apparatus comprising a collar connected to the shaft such that the collar translates with the shaft; a stop assembly comprising a first and a second contact surface, wherein the first and second contact surfaces constrain translational movement of the collar; and a sealing mechanism.

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10. An apparatus according to claim 9, wherein the sealing mechanism is integral with stop assembly, such that the first contact surface together with the collar form a seal when the shaft is in the shutoff position.

11. An apparatus according to claim 9, wherein the stop assembly comprises a first component attached to a second component, the first component comprises the first contact surface and the second component comprises the second contact surface.

12. An apparatus according to claim 10, wherein the sealing mechanism further comprises O-rings.

13. An apparatus according to claim 9, wherein the apparatus further comprises a floating flushing bushing and flushing vent, the bushing being operatively connected to the apparatus for tracking radial shaft deflection and being positioned a distance from the shaft ranging from about .001" to about .003".

14. An apparatus according to claim 9, wherein the stop assembly constrains the collar from translating in a first direction greater than about 1/8" and from translating in a second direction greater than about 1/8".

15. An apparatus according to claim 14, wherein the first direction is upward and wherein the second direction is downward.

16. A method for providing a sealing engagement between a vessel and a

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rotatable shaft comprising:

providing a seal shutoff apparatus having a collar connected to the shaft such that the collar translates with the shaft, a stop assembly comprising a first and a second contact surface, wherein the first and second contact surfaces constrain translational movement of the collar, and a sealing mechanism; and

translating the collar in a first direction such that the first contact surface together with the collar form a seal.

17. A method according to claim 16, wherein the first direction is upward.

18. A method according to claim 16, wherein the first direction is downward.

19. An apparatus for use with a vessel having a housing and a shaft extending through the vessel, wherein the shaft translates at least between an operating position and a shutoff position, the apparatus comprising:

a first stopping means connected to the shaft such that the first sealing means translates with the shaft; and

a second stopping means disposed within the apparatus housing wherein the first stopping means together with the second stopping means constrain translational movement of the shaft to a range of from about 0.06" to about 0.19".

20. An apparatus according to claim 19, wherein the first stopping means sealingly engages the second stopping means when the shaft is in the shutoff position.

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